LIST OF CONTENTS

Number 1

	iii	Editorial
	v	Editorial
T.-M. Guo	1	Comment
I. M. Hsing, R. Srinivasan, M. P. Harold, K. F. Jensen and **M. A. Schmidt**	3	Simulation of micromachined chemical reactors for heterogeneous partial oxidation reactions
S. Rebouillat, B. Steffenino and **B. Letellier**	15	Hydrodynamics of high speed fibre impregnation
U. Shah, S. M. Mahajani, M. M. Sharma and **T. Sridhar**	25	Effect of supercritical conditions on the oxidation of isobutane
C.-M. Lin, P. Neogi and **R. M. Ybarra**	37	Statics and dynamics of contact lines of nematic liquid crystals on mica
S.-Y. Lin, Y. Suzuki, H. Hatano and **K. Tsuchiya**	43	Pressure effect on char combustion in different rate-control zones: initial rate expression
J.-B. W. P. Loos, P. J. T. Verheijen and **J. A. Moulijn**	51	Improved estimation of zeolite diffusion coefficients from zero-length column experiments
J. Gomes and **A. S. Menawat**	67	Precise control of dissolved oxygen in bioreactors – a model-based geometric algorithm
M. Fullana, F. Trabelsi and **F. Recasens**	79	Use of neural net computing for statistical and kinetic modelling and simulation of supercritical fluid extractors
Y. H. Lee, D. M. Scott and **R. B. Thorpe**	97	Energy losses due to large bubbles beneath spargers in circulating bubble columns
F. Sanchez, R. Barna, A. Garrabrants, D. S. Kosson and **P. Moszkowicz**	113	Environmental assessment of a cement-based solidified soil contaminated with lead
J. Sternéus, F. Johnsson and **B. Leckner**	129	Gas mixing in circulating fluidised-bed risers
P. Duboc and **U. von Stockar**	149	Modeling of oscillating cultivations of *Saccharomyces cerevisiae*: Identification of population structure and expansion kinetics based on on-line measurements
J. Xiao, C.-W. Li and **M.-H. Li**	161	Kinetics of absorption of carbon dioxide into aqueous solutions of 2-amino-2-methyl-1-propanol + monoethanolamine
T. Johannessen, S. E. Pratsinis and **H. Livbjerg**	177	Computational fluid-particle dynamics for the flame synthesis of alumina particles

I. Sanchez, G. Mazza, G. Flamant and **D. Gauthier**	193	A streamtube non-isothermal spouted-bed reactor mathematical model
H. H. Bau	203	Book Review
	205	Erratum

Number 2

SPECIAL ISSUE

NON-LINEAR DYNAMICS IN CHEMICAL AND BIOENGINEERING PROCESSESS — SELECTED PAPERS FROM CHISA'98

J. Drahoš, M. Marek and **I. Schreiber**	207	Preface
S. K. Scott, B. R. Johnson, A. F. Taylor and **M. R. Tinsley**	209	Complex chemical reactions — A review
R. Baba, Y. Shiomi and **S. Nakabayashi**	217	Spatiotemporal reaction propagation of electrochemically controlled non-linear iron current oscillator
M. Dolnik, A. M. Zhabotinsky, A. B. Rovinsky and **I. R. Epstein**	223	Spatio-temporal patterns in a reaction–diffusion system with wave instability
L. Forštová, H. Ševčíková, M. Marek and **J. H. Merkin**	233	Electric field effects on selectivity of reactions within propagating reaction fronts
T. Kirner, J. Ackermann, D. Steen, R. Ehricht, T. Ellinger, P. Foerster and **J. S. McCaskill**	245	Complex patterns in a trans-cooperatively coupled DNA amplification system
J. Krishnan, M. Bär, R. Imbihl and **I. G. Kevrekidis**	257	Pulse dynamics and interaction on anisotropic surfaces: a computer-assisted study
M. Orbán, K. Kurin-Csörgei, G. Rábai and **I. R. Epstein**	267	Mechanistic studies of oscillatory copper(II) catalyzed oxidation reactions of sulfur compounds
W. Harmon Ray and **C. M. Villa**	275	Nonlinear dynamics found in polymerization processes — a review
A. Brucato, M. Ciofalo, F. Grisafi and **R. Tocco**	291	On the simulation of stirred tank reactors via computational fluid dynamics
G. Continillo, V. Faraoni, P. L. Maffettone and **S. Crescitelli**	303	Non-linear dynamics of a self-igniting reaction–diffusion system
M. Gummalla, P.-A. Bui and **D. G. Vlachos**	311	Nonlinear dynamics of surface stabilized premixed and diffusion flames: current trends and future directions
O. Paladino and **M. Ratto**	321	Robust stability and sensitivity of real controlled CSTRs
G. Porru, C. Aragonese, R. Baratti and **A. Servida**	331	Monitoring of a CO oxidation reactor through a grey model-based EKF observer
W. Żukowski and **M. Berezowski**	339	Generation of chaotic oscillations in a system with flow reversal
R. M. Roberts, Y. Ye, E. A. Demekhin and **H.-C. Chang**	345	Wave dynamics in two-layer Couette flow

S. Cerbelli, J. M. Zalc and **F. J. Muzzio**	363	The evolution of material lines curvature in deterministic chaotic flows
G. Dünnebier and **K.-U. Klatt**	373	Modelling and simulation of nonlinear chromatographic separation processes: a comparison of different modelling approaches
M. Giona, A. Adrover, F. J. Muzzio and **S. Cerbelli**	381	The geometry of mixing in 2-d time-periodic chaotic flows
P. Hasal, J.-L. Montes, H.-C. Boisson and **I. Fořt**	391	Macro-instabilities of velocity field in stirred vessel: detection and analysis
H. Ji, H. Ohara, K. Kuramoto, A. Tsutsumi, K. Yoshida and **T. Hirama**	403	Nonlinear dynamics of gas–solid circulating fluidized-bed system
Y. Kang, Y. J. Cho, K. J. Woo, K. I. Kim and **S. D. Kim**	411	Bubble properties and pressure fluctuations in pressurized bubble columns
M. Ruzicka, J. Drahoš, J. Zahradník and **N. H. Thomas**	421	Structure of gas pressure signal at two-orifice bubbling from a common plenum
F. Štěpánek, M. Kubíček, M. Marek, M. Šoóš, P. Rajniak and **R. T. Yang**	431	On the modeling of PSA cycles with hysteresis-dependent isotherms
M. Mangold, A. Kienle, E. D. Gilles and **K. D. Mohl**	441	Nonlinear computation in DIVA — methods and applications
F. Lesage, M. A. Latifi and **N. Midoux**	455	Boundary element method in modelling of momentum transport and liquid-to-wall mass transfer in a packed-bed reactor
R. A. Satnoianu, J. H. Merkin and **S. K. Scott**	461	Pattern formation in a differential–flow reactor model
	471	Announcement
	I	Index

Number 3

B. R. Stoll, R. P. Batycky, H. R. Leipold, S. Milstein and **D. A. Edwards**	473	A theory of molecular absorption from the small intestine
A. Attou and **G. Ferschneider**	491	A two-fluid hydrodynamic model for the transition between trickle and pulse flow in a cocurrent gas–liquid packed-bed reactor
S. J. Parulekar	513	Analysis of forced periodic operations of continuous bioprocesses: multiple input variations
P. Havelka, V. Linek, J. Sinkule, J. Zahradník and **M. Fialová**	535	Hydrodynamic and mass transfer characteristics of ejector loop reactors

K. Edwards and **T. F. Edgar** 551 Reaction set simplification using variable selection techniques

Y. Wu and **D. Gidaspow** 573 Hydrodynamic simulation of methanol synthesis in gas–liquid slurry bubble column reactors

A. L. Paiva and **F. X. Malcata** 589 Comparison of the performance of integrated and sequential reaction and separation units in terms of recovery of a desired product

C. F. Ivory 601 Temperature profiles in the thermal entrance region for laminar flow in an electrically heated slit

M. Sheintuch 615 On the intermediate asymptote of diffusion-limited reactions in a fractal porous catalyst

D. Y.-C. Thong, F. J. L. Castillo and **G. P. Towler** 625 Distillation design and retrofit using stage-composition lines

C. A. Spade and **V. A. Volpert** 641 On the steady-state approximation in thermal free radical frontal polymerization

C. Li and **H. Lee** 655 Density calculation of electrolyte solutions with the solution osmotic pressure

A. D. Harvey III, D. H. West and **N. B. Tufillaro** 667 Evaluation of laminar mixing in stirred tanks using a discrete-time particle-mapping procedure

M. Vanni 685 Creeping flow over spherical permeable aggregates

W. A. J. van Benthum, R. G. J. M. van der Lans, M. C. M. van Loosdrecht and **J. J. Heijnen** 699 The biofilm airlift suspension extension reactor — II: Three-phase hydrodynamics

Shorter Communications

M. Seggiani, S. Vitolo and **C. Rizzo** 713 A re-examination of the diffuse interface model for gas–solid reaction

M. Yokota, A. Sato and **N. Kubota** 717 A simple method for evaluating kinetic parameters in non-isothermal batch crystallization

Number 4

M. Goto and **B. J. McCoy** 723 Inverse size-exclusion chromatography for distributed pore and solute sizes

W. M. Jung, S. H. Kang, W.-S. Kim and **C. K. Choi** 733 Particle morphology of calcium carbonate precipitated by gas–liquid reaction in a Couette–Taylor reactor

D. Lafarga and **A. Varma**	749	Ethylene epoxidation in a catalytic packed-bed membrane reactor: effects of reactor configuration and 1,2-dichloroethane addition
G. de la Puente and **U. Sedran**	759	Evaluation of hydrogen transfer in FCC catalysts. A new approach for cyclohexene as a test reactant
K. Khellaf, G. Lauriat and **J. Legrand**	767	Numerical tracking and circulation time distribution in an infinite Taylor system
D. E. Smiles	773	Material coordinates and solute movement in consolidating clay
F. Vegliò, F. Beolchini, A. Nardini and **L. Toro**	783	Bioleaching of a pyrrhotite ore by a sulfooxidans strain: kinetic analysis
Q. Yang, J. Ding and **Z. Shen**	797	Investigation on fouling behaviors of low-energy surface and fouling fractal characteristics
J. Shin, H. Seo, M. Han and **S. Park**	807	A nonlinear profile observer using tray temperatures for high-purity binary distillation column control
Y. S. Ho and **G. McKay**	817	Correlative biosorption equilibria model for a binary batch system
F. W. J. van den Berg, H. C. J Hoefsloot, H. F. M. Boelens and **A. K. Smilde**	827	Selection of optimal sensor position in a tubular reactor using robust degree of observability criteria
H. Zhou, J. Lu and **L. Lin**	839	Turbulence structure of the solid phase in transition region of a circulating fluidized bed
J. S. Vrentas and **C. M. Vrentas**	849	Asymptotic solutions for laminar dispersion in circular tubes
M. Gustavsson and **A. E. Almstedt**	857	Numerical simulation of fluid dynamics in fluidized beds with horizontal heat exchanger tubes
M. Gustavsson and **A. E. Almstedt**	867	Two-fluid modelling of cooling-tube erosion in a fluidized bed

Number 5

G. Parthasarathy and **M. M. El-Halwagi**	881	Optimum mass integration strategies for condensation and allocation of multicomponent VOCs
G. Saracco and **V. Specchia**	897	Catalytic filters for the abatement of volatile organic compounds
I. Quiñones, J. C. Ford and **G. Guiochon**	909	Multisolute adsorption equilibria in a reversed-phase liquid chromatography system

M. Yamamura, S. Suematsu, T. Kajiwara and **K. Adachi**	931	Experimental investigation of air entrainment in a vertical liquid jet flowing down onto a rotating roll
F. Raymond and **J.-M. Rosant**	943	A numerical and experimental study of the terminal velocity and shape of bubbles in viscous liquids
K. A. Hawboldt, W. D. Monnery and **W. Y. Svrcek**	957	New experimental data and kinetic rate expression for H_2S pyrolysis and re-association
M. Winterberg, E. Tsotsas, A. Krischke and **D. Vortmeyer**	967	A simple and coherent set of coefficients for modelling of heat and mass transport with and without chemical reaction in tubes filled with spheres
Y. Ma and **J.-X. Zhu**	981	Heat transfer between gas–solids suspension and immersed surface in an upflow fluidized bed (riser)
U. Mann	991	New design formulation of chemical reactors with multiple reactions: I. Basic concepts
Y. Berman, A. Tanklevsky, Y. Oren and **A. Tamir**	1009	Modeling and experimental studies of SO_2 absorption in coaxial cylinders with impinging streams: Part I
Y. Berman, A. Tanklevsky, Y. Oren and **A. Tamir**	1023	Modeling and experimental studies of SO_2 absorption in coaxial cylinders with impinging streams: Part II
Shorter Communications		
K. Aravamudan and **M. H. I. Baird**	1029	Formation of tailed drops in liquid–liquid extraction
J. R. G. Andrews and **D. M. Scott**	1033	Similarity solutions for multicomponent nonlinear diffusion

Number 6

E. L. Cussler	1039	Comment
R. Rota, E. F. Zanoelo, D. Antos, M. Morbidelli and **S. Carrà**	1041	Analysis of the thermal $DeNO_x$ process at high partial pressure of reactants
S. Hauan, A. W. Westerberg and **K. M. Lien**	1053	Phenomena-based analysis of fixed points in reactive separation systems
T.-S. Chung, J.-J. Qin and **J. Gu**	1077	Effect of shear rate within the spinneret on morphology, separation performance and mechanical properties of ultrafiltration polyethersulfone hollow fiber membranes
T.-S. Chung, E. Swee Phin Loh and **J.-J. Shieh**	1093	A simple approach to estimate gas permeability and selectivity of extremely thin and brittle materials
T.-Y. Ying, S. Yiacoumi and **C. Tsouris**	1101	High-gradient magnetically seeded filtration

C. Duchanoy and **F. Lapicque** 1115 Current distributions on patterned electrodes in laminar flow

R. M. Roberts and **H.-C. Chang** 1127 Wave-enhanced interfacial transfer

R. C. Chen and **J. L. Wu** 1143 The flow characteristics between two interactive spheres

M. R. Davidson 1159 Boundary integral prediction of the spreading of an inviscid drop impacting on a solid surface

O. Molerus 1171 Fluid mechanics in terms of eigenparameters Part I: Fundamentals

O. Molerus 1179 Fluid mechanics in terms of eigenparameters Part II: Exemplary applications

Shorter Communications

E. Peirano and **B. Leckner** 1189 A mean diameter for numerical computations of polydispersed gas–solid suspensions in fluidization

Number 7

J. E. Butler and **R. T. Bonnecaze** 1193 Inverse method for imaging a free surface using electrical impedance tomography

S. Brandani, M. A. Jama and **D. M. Ruthven** 1205 ZLC Measurements under non-linear conditions

X. Tan and **K. Li** 1213 Investigation of novel membrane reactors for removal of dissolved oxygen from water

D. J. Louwerse and **A. K. Smilde** 1225 Multivariate statistical process control of batch processes based on three-way models

S. S. Ponoth and **J. B. McLaughlin** 1237 Numerical simulation of mass transfer for bubbles in water

T.-B. Ligia, B. Radu, M. Pierre and **B. Hae-Ryong** 1257 Distributed mass transfer rate for modelling the leaching of porous granular materials containing soluble pollutants

M. P. Pradhan and **J. B. Joshi** 1269 Absorption of NO_x gases in plate column: Selective manufacture of sodium nitrite

F. Gao, F. Wang and **M. Li** 1283 A simple nonlinear controller with diagonal recurrent neural network

S. J. Kowalski 1289 Toward a thermodynamics and mechanics of drying processes

X. Yang and **L. J. Guo** 1305 Particle dispersion in organized vortex structures within turbulent free shear flows

K. J. Bittorf and **S. M. Kresta** 1325 Active volume of mean circulation for stirred tanks agitated with axial impellers

J. Lee and **J. Y. Choi** 1337 In-line mixer for feedforward control and adaptive feedback control of pH processes

Number 8

G. Micco, P. A. Netti, L. Nicolais, A. Collina and **G. Astarita** 1347 A novel approach for grinding operation scale-up

C. T. Goralski Jr., R. P. O'Connor and **L. D. Schmidt** 1357 Modeling homogeneous and heterogeneous chemistry in the production of syngas from methane

Y. Benabderrahmane and **J.-P. Pain** 1371 Thermal behaviour of a solid/liquid mixture in an ohmic heating sterilizer - slip phase model

C. Nicolella, P. Pavasant and **A. G. Livingston** 1385 Substrate counterdiffusion and reaction in membrane-attached biofilms: mathematical analysis of rate limiting mechanisms

A. A. Pota and **A. P. Mathews** 1399 Absorption dynamics in a stratified convergent tapered bed

T. Garcia, A. Coteron, M. Martinez and **J. Aracil** 1411 Kinetic model for the esterification of oleic acid and cetyl alcohol using an immobilized lipase as catalyst

P. K. Ten and **R. W. Field** 1425 Organophilic pervaporation: an engineering science analysis of component transport and the classification of behaviour with reference to the effect of permeate pressure

D. Papadias, L. Edsberg and **P. Björnbom** 1447 Simplified method for effectiveness factor calculations in irregular geometries of washcoats

I. Keren and **M. Sheintuch** 1461 Modeling and analysis of spatiotemporal oscillatory patterns during CO oxidation in the catalytic converter

R. Hausmann, C. Hoffmann, M. Franzreb and **W. H. Höll** 1477 Mass transfer rates in a liquid magnetically stabilized fluidized bed of magnetic ion-exchange particles

E. Y. Kenig, F. Butzmann, L. Kucka and **A. Górak** 1483 Comparison of numerical and analytical solutions of a multicomponent reaction-mass-transfer problem in terms of the film model

F. J. Muzzio, M. M. Alvarez, S. Cerbelli, M. Giona and **A. Adrover** 1497 The intermaterial area density generated by time- and spatially periodic 2D chaotic flows

Number 9

V. P. Joshi, M. G. Kulkarni and **R. A. Mashelkar** 1509 Enhancing adsorptive separations by molecularly imprinted polymers: Role of imprinting techniques and system parameters

J. Bergendahl and **D. Grasso**	1523	Prediction of colloid detachment in a model porous media: hydrodynamics
S. Qiao and **X. Hu**	1533	Effect of micropore size distribution induced heterogeneity on binary adsorption kinetics of hydrocarbons in activated carbon
M. Mohseni and **D. G. Allen**	1545	Biofiltration of mixtures of hydrophilic and hydrophobic volatile organic compounds
I. V. Koptyug, S. I. Kabanikhin, K. T. Iskakov, V. B. Fenelonov, L. Yu. Khitrina, R. Z. Sagdeev and **V. N. Parmon**	1559	A quantitative NMR imaging study of mass transport in porous solids during drying
J. H. B. J. Hoebink, R. A. van Gemert, J. A. A. van den Tillaart and **G. B. Marin**	1573	Competing reactions in three-way catalytic converters: modelling of the NO_x conversion maximum in the light-off curves under net oxidising conditions
S. Kolavennu, S. Palanki and **J. C. Cockburn**	1583	Robust control of I/O linearizable systems via multi-model H_2/H_∞ synthesis
F. A. Poposka, J. Prochazka, R. Tomovska, K. Nikolovski and **A. Grizo**	1591	Extraction of tartaric acid from aqueous solutions with tri-*iso*-octylamine (HOSTAREX A 324). Equilibrium and kinetics
M. C. Georgiadis and **S. Macchietto**	1605	Dynamic modelling and simulation of plate heat exchangers under milk fouling
B. A. Buffham, K. Hellgardt, M. J. Heslop and **G. Mason**	1621	Remote sensing of the flux responses of a gas–solid catalytic micro-reactor
P. Senthil Kumar, M. Siva Kumar and **A. B. Pandit**	1633	Experimental quantification of chemical effects of hydrodynamic cavitation
J. P. Puaux, G. Bozga and **A. Ainser**	1641	Residence time distribution in a corotating twin-screw extruder
M. Balmelli, L. Steiner and **S. Hartland**	1653	Behaviour of turbulent dispersions in a stirred single-stage cell
M. García-Calzada, G. Marbán and **A. B. Fuertes**	1661	Decomposition of CaS particles at ambient conditions
J. Hager, R. Wimmerstedt and **S. Whitaker**	1675	Steam drying a bed of porous spheres: Theory and experiment
K. Guo, F. Guo, Y. Feng, J. Chen, C. Zheng and **N. C. Gardner**	1699	Synchronous visual and RTD study on liquid flow in rotating packed-bed contactor
E. Massing, J. F. Brilhac, A. Brillard, P. Gilot and **G. Prado**	1707	Modelling of the behaviour of a three way catalytic converter at steady state. Influence of the propene diffusion inside the catalytic layer

D. D. Do, H. D. Do and **I. Prasetyo** 1717 Constant molar flow semi-batch adsorber as a tool to study adsorption kinetics of pure gases and vapours

Shorter Communication

Y. Liu, I. T. Cameron and **F. Y. Wang** 1729 The wavelet-collocation method for transient problems with steep gradients

Number 10

M. Lindberg and **Å. C. Rasmuson** 1735 Supersaturation generation at the feed point in reaction crystallization of a molecular compound

N. Sundaram and **R. T. Yang** 1747 Binary diffusion of unequal sized molecules in zeolites

G. H. Meeten 1755 Septum and filtration properties of rigid and deformable particle suspensions

S. K. Karode 1769 A new unsteady-state model for macromolecular ultrafiltration

S. M. Heydarian, A. P. Ison, M. D. Lilly and **P. A. Ayazi Shamlou** 1775 Turbulent breakage of filamentous bacteria in mechanically agitated batch culture

S. R. Tessier, J. F. Brennecke and **M. A. Stadtherr** 1785 Reliable phase stability analysis for excess Gibbs energy models

Z. Sha and **S. Palosaari** 1797 Mixing and crystallization in suspensions

J.-N. Baléo, A. Subrenat and **P. Le Cloirec** 1807 Numerical simulation of flows in air treatment devices using activated carbon cloths filters

A. Kienle 1817 Low-order dynamic models for ideal multicomponent distillation processes using nonlinear wave propagation theory

Y. Jiang, M. R. Khadilkar, M. H. Al-Dahhan and **M. P. Dudukovic** 1829 Single phase flow modeling in packed beds: discrete cell approach revisited

J. Ereña, J. M. Arandes, J. Bilbao, A. G. Gayubo and **H. I. De Lasa** 1845 Conversion of syngas to liquid hydrocarbons over a two-component (Cr_2O_3–ZnO and ZSM-5 zeolite) catalyst: Kinetic modelling and catalyst deactivation

Z. H. Wang and **G. Chen** 1857 Heat and mass transfer in batch fluidized-bed drying of porous particles

H. Benkhelifa, J. Legrand, P. Legentilhomme and **A. Montillet** 1871 Study of the hydrodynamic behaviour of the batch and continuous torus reactor in laminar and turbulent flow regimes by means of tracer methods

S. W. Sung and **I.-B. Lee** 1883 An improved algorithm for automatic tuning of PID controllers

S. Kumar, T. W. Pirog and **D. Ramkrishna** 1893 A new method for estimating hindered creaming/settling velocity of particles in Polydisperse Systems

M. F. W. Distelhoff and **A. J. Marquis** 1905 Scalar mixing in the vicinity of two disk turbines and two pitched blade impellers

Shorter Communications

S. Nair and **A. N. Bhaskarwar** 1921 Washing kinetics of pollution-preventing lithographic inks

W. R. Paterson and **A. N. Hayhurst** 1925 Mass or heat transfer from a sphere to a flowing fluid

A. A. Barresi 1929 Selectivity of mixing-sensitive reactions in slurry systems

Letters to the Executive Editors

S. Brandani and **D. Ruthven** 1935 Comments on "Bridging the gap between macroscopic and NMR diffusivities" by T. A. Nijhuis, L. J. P. van den Broeke, J. M. van de Graaf, F. Kapteijn, M. Makkee, and J. A. Moulijn [Chemical Engineering Science 52 (1997) 3401–3404]

T. A. Nijhuis, M. J. G. Linders, M. Makkee, F. Kapteijn and **J. A. Moulijn** 1939 Reply to comments on "Bridging the gap between macroscopic and NMR diffusivities"

P. M. Biesheuvel 1945 Comments on "A generalized empirical description for particle slip velocities in liquid fluidized beds" by K. P. Galvin, S. Pratten and G. Nguyen Tran Lam [Chemical Engineering Science 54 (1999) 1045–1052]

K. P. Galvin 1949 Reply to comments on "A generalized empirical description for particle slip velocities in liquid fluidized beds"

D. D. Perlmutter 1953 Book Review

Number 11

S. E. Rankin and **A. V. McCormick** 1955 Hydrolysis pseudoequilibrium: challenges and opportunities to sol–gel silicate kinetics

S.-S. Hsiau and **Y.-M. Shieh** 1969 Effect of solid fraction on fluctuations and self-diffusion of sheared granular flows

S. Subramanian, R. A. Kini, S. F. Dec and **E. D. Sloan Jr** 1981 Evidence of structure II hydrate formation from methane + ethane mixtures

M. C. Hogan and **J. M. Woodley** 2001 Modelling of two enzyme reactions in a linked cofactor recycle system for chiral lactone synthesis

M. Cook and **M. Behnia** 2009 Slug length prediction in near horizontal gas–liquid intermittent flow

C. Cozewith and **K. R. Squire** 2019 Effect of reactor residence time distribution on polymer functionalization reactions

A. E. Smith, Z. Zhang and **C. R. Thomas** 2031 Wall material properties of yeast cells: Part 1. Cell measurements and compression experiments

A. E. Smith, K. E. Moxham and **A. P. J. Middelberg** 2043 Wall material properties of yeast cells. Part II. Analysis

M. I. Yórquez-Ramírez and **G. R. Duursma** 2055 Study of the flow pattern above an erupting bubble in an incipiently fluidised bed using image shifting

J. G. M. Winkelman, M. Ottens and **A. A. C. M. Beenackers** 2065 The kinetics of the dehydration of methylene glycol

A. Mate, O. Masbernat and **C. Gourdon** 2073 Detachment of a drop from an internal wall in a pulsed liquid–liquid column

S. Melles, J. Grievink and **S. M. Schrans** 2089 Optimisation of the conceptual design of reactive distillation columns

D. Cao and **W. Wang** 2099 Coordination number models and equations of state for square-well pure and mixture fluids: Part I. Coordination number models and Monte Carlo simulation at high density

D. Cao and **W. Wang** 2111 Coordination number models and equations of state for square-well pure and mixture fluids, Part II: Equations of state

R. P. Stateva, G. St. Cholakov, A. A. Galushko and **W. A. Wakeham** 2121 A powerful algorithm for liquid–liquid–liquid equilibria predictions and calculations

H. M. Park and **O. Y. Chung** 2131 Inverse natural convection problem of estimating wall heat flux

Number 12

E. López, A. F. Errazu, D. O. Borio and **V. Bucalá** 2143 Alternative designs for a catalytic converter operating under autothermal conditions

G. G. Chase, V. Beniwal and **C. Venkataraman** 2151 Measurement of uni-axial fiber angle in non-woven fibrous media

G. Groppi and **E. Tronconi** 2161 Design of novel monolith catalyst supports for gas/solid reactions with heat exchange

M.-H. Sung, I.-S. Choi, J.-S. Kim and **W.-S. Kim**	2173	Agglomeration of yttrium oxalate particles produced by reaction precipitation in semi-batch reactor
C. Pagella and **D. M. De Faveri**	2185	H_2S gas treatment by iron bioprocess
E. Reverchon, A. Kaziunas and **C. Marrone**	2195	Supercritical CO_2 extraction of hiprose seed oil: experiments and mathematical modelling
A. Dayan, S. Zalmanovich and **A. Ullmann**	2203	Measurements of solid contaminant emission rates from boiling pools
D. A. White and **N. Verdone**	2213	Numerical modelling of sedimentation processes
Y.-Y. Yang, T.-S. Chung, X.-L. Bai and **W.-K. Chan**	2223	Effect of preparation conditions on morphology and release profiles of biodegradable polymeric microspheres containing protein fabricated by double-emulsion method
G. E. Suares and **K. A. Hoo**	2237	Parameter estimation of a proton-exchange membrane fuel cell using voltage–current data
N. Mongkolsiri, P. Praserthdam, P. L. Silveston and **R. R. Hudgins**	2249	Transient study of the effect of residual cations in Cu/ZSM-5 for SCR of NO by hydrocarbon
X. Lu, J. Ding, Y. Wang and **J. Shi**	2257	Comparison of the hydrodynamics and mass transfer characteristics of a modified square airlift reactor with common airlift reactors
J. Mitrovic	2265	Upon equilibrium of gas bubble in infinite liquid
G. Veser and **J. Frauhammer**	2271	Modelling steady state and ignition during catalytic methane oxidation in a monolith reactor
C. J. Liu, X. G. Yuan, K. T. Yu and **X. J. Zhu**	2287	A fluid–dynamic model for flow pattern on a distillation tray
W. M. Long and **L. V. Kalachev**	2295	On dissolution of a spherical gas bubble in the presence of fast reaction
R. J. Spurling, J. F. Davidson and **D. M. Scott**	2303	The no-flow problem for granular material in rotating kilns and dish granulators
B. Huang and **E. C. Tamayo**	2315	Model validation for industrial model predictive control systems
J. C. Thoméo and **J. T. Freire**	2329	Heat transfer in fixed bed: a model non-linearity approach
Shorter Communications		
J.-J. Wang, L.-F. Feng, X.-P. Gu, K. Wang and **C.-H. Hu**	2339	Power consumption of inner–outer helical ribbon impellers in viscous Newtonian and non-Newtonian fluids

Letters to the Editors

D. Karamanev	2343	Comments on "Dynamic simulation of dispersed gas–liquid two-phase flow using a discrete bubble model"
E. Delnoij and **J. A. M. Kuipers**	2345	Reply to comments on "Dynamic simulation of dispersed gas–liquid two-phase flow using a discrete bubble model"
J. G. Khinast, D. Luss, T. M. Leib and **M. P. Harold**	2347	Erratum
B. D. Wood and **S. Whitaker**	2349	Erratum

Number 13

G. M. Kontogeorgis and **P. M. Vlamos**	2351	An interpretation of the behavior of EoS/G^E models for asymmetric systems
W. R. Bowen, Y. Liang and **P. M. Williams**	2359	Gradient diffusion coefficients — theory and experiment
F. Favari, A. Bertucco, N. Elvassore and **M. Fermeglia**	2379	Multiphase multicomponent equilibria for mixtures containing polymers by the perturbation theory
K. R. Harris, M. C. Colantonio and **A. Palazoğlu**	2393	On the computation of a nonlinearity measure using functional expansions
J. R. Burns, J. N. Jamil and **C. Ramshaw**	2401	Process intensification: operating characteristics of rotating packed beds — determination of liquid hold-up for a high-voidage structured packing
M. Nabeshima	2417	Consistent structure and thermodynamic characteristics of transport potential model proposed for liquid–liquid solvent extraction
J.-B. He, Q.-G. Wang and **T.-H. Lee**	2429	PI/PID controller tuning via LQR approach
S. B. Chen and **X. Ye**	2441	Boundary effect on slow motion of a composite sphere perpendicular to two parallel impermeable plates
M. Feinberg	2455	Optimal reactor design from a geometric viewpoint. Part II. Critical sidestream reactors
R. Li and **X. Liu**	2481	Active species injection in flue gas denitrification
R. Li and **X. Liu**	2491	Main fundamental gas reactions in denitrification and desulfurization from flue gas by non-thermal plasmas
M. Kostoglou	2507	Mathematical analysis of polymer degradation with chain-end scission

N. P. Müller and **H. Segura** 2515 An overall rate-based stage model for cross flow distillation columns

E. C. Marcoulaki and **A. C. Kokossis** 2529 On the development of novel chemicals using a systematic synthesis approach. Part I. Optimisation framework

E. C. Marcoulaki and **A. C. Kokossis** 2547 On the development of novel chemicals using a systematic optimisation approach. Part II. Solvent design

Number 14

C. M. Jones and **M. A. Larson** 2563 Using dislocations and integral strain to model the growth rates of secondary nuclei

P. Cognet, A. Ghanem-Lakhal, J. Berlan, A.-M. Wilhelm, H. Delmas and **P.-L. Fabre** 2571 Application of ultrasound technology to electroorganic synthesis: Reduction of acetophenone

W. Strieder 2579 Chemoreceptor diffusion and reaction: first-order kinetics

M. H. Chen and **S. S. S. Cardoso** 2585 The mixing of liquids by a plume of low-Reynolds number bubbles

P. M. Biesheuvel 2595 Particle segregation during pressure filtration for cast formation

J. Padin and **R. T. Yang** 2607 New sorbents for olefin/paraffin separations by adsorption via π-complexation: synthesis and effects of substrates

W. Jin, X. Gu, S. Li, P. Huang, N. Xu and **J. Shi** 2617 Experimental and simulation study on a catalyst packed tubular dense membrane reactor for partial oxidation of methane to syngas

A. Armaou and **P. D. Christofides** 2627 Wave suppression by nonlinear finite-dimensional control

S. P. Lim, X. Tan and **K. Li** 2641 Gas/vapour separation using membranes: Effect of pressure drop in lumen of hollow fibres

T. S. Zhao, P. Cheng and **C. Y. Wang** 2653 Buoyancy-induced flows and phase-change heat transfer in a vertical capillary structure with symmetric heating

S. Pereda, K. Thomsen and **P. Rasmussen** 2663 Vapor–liquid–solid equilibria of sulfur dioxide in aqueous electrolyte solutions

M. C. Iliuta, K. Thomsen and **P. Rasmussen** 2673 Extended UNIQUAC model for correlation and prediction of vapour–liquid–solid equilibria in aqueous salt systems containing non-electrolytes. Part A. Methanol–water–salt systems

S. Ioannidis, A. Anderko and **S. J. Sanders** 2687 Internally consistent representation of binary ion exchange equilibria

M. Pavageau, L. Le Coq, J. Mabit and **C. Solliec** 2699 About the applicability of commonly used pressure-flow models to plane single-layer filters of activated carbon fabric

J. Tanskanen and **V. J. Pohjola** 2713 Minimum internal recycle in nonideal homogeneous multicomponent distillation

H. Teng and **T. S. Zhao** 2727 An extension of Darcy's law to non-Stokes flow in porous media

O. Ozkan, A. Calimli, R. Berber and **H. Oguz** 2737 Effect of inert solid particles at low concentrations on gas–liquid mass transfer in mechanically agitated reactors

Shorter Communication

H. Liu, B. Chen and **C. Li** 2741 Identification of hydrodynamic similarity in risers of circulating fluidized beds

Number 15

2745 Fourteenth P. V. Danckwerts memorial lecture

J. M. Ottino 2749 The art of mixing with an admixture of art: viewing creativity through P. V. Danckwerts's early work

C. Brasquet and **P. Le Cloirec** 2767 Pressure drop through textile fabrics — experimental data modelling using classical models and neural networks

S. Mohanty, H. T. Davis and **A. V. McCormick** 2779 Shape selective adsorption in atomistic nanopores — a study of xylene isomers in silicalite

D. W. F. Brilman, M. J. V. Goldschmidt, G. F. Versteeg and **W. P. M. van Swaaij** 2793 Heterogeneous mass transfer models for gas absorption in multiphase systems

M. C. Iliuta, I. Iliuta and **F. Larachi** 2813 Vapour–liquid equilibrium data analysis for mixed solvent–electrolyte systems using neural network models

I. Yuranov, L. Kiwi-Minsker, M. Slin'ko, E. Kurkina, E. D. Tolstunova and **A. Renken** 2827 Oscillatory behavior during CO oxidation over Pd supported on glass fibers: experimental study and mathematical modeling

M. M. Cardoso, R. M. C. Viegas and **J. P. S. G. Crespo** 2835 Kinetics of phenylalanine extraction and reextraction by cationic reversed micelles using a diffusion cell

U. Arena and **M. L. Mastellone** 2849 Defluidization phenomena during the pyrolysis of two plastic wastes

A. H. Nhaesi and **A.-F. A. Asfour** 2861 Prediction of the viscosity of multi-component liquid mixtures: a generalized McAllister three-body interaction model

M. Soick, D. Wolf and **M. Baerns**	2875	Determination of kinetic parameters for complex heterogeneous catalytic reactions by numerical evaluation of TAP experiments
F. Battin–Leclerc, P. A. Glaude, V. Warth, R. Fournet, G. Scacchi and **G. M. Côme**	2883	Computer tools for modelling the chemical phenomena related to combustion
S. Heidenreich, U. Vogt, H. Büttner and **F. Ebert**	2895	A novel process to separate submicron particles from gases — a cascade of packed columns
A. Kubaczka and **A. Burghardt**	2907	Effect of mass transport resistances in multicomponent membrane extraction on the overall mass fluxes
E. M. C. Reis-Vasco, J. A. P. Coelho, A. M. F. Palavra, C. Marrone and **E. Reverchon**	2917	Mathematical modelling and simulation of pennyroyal essential oil supercritical extraction
F. Kapteijn, J. A. Moulijn and **R. Krishna**	2923	The generalized Maxwell–Stefan model for diffusion in zeolites: sorbate molecules with different saturation loadings
C. Di Blasi	2931	Dynamic behaviour of stratified downdraft gasifiers
M. Tayakout-Fayolle, E. Jolimaitre and **C. Jallut**	2945	Consequence of structural identifiability properties on state-model formulation for linear inverse chromatography
C. Vial, E. Camarasa, S. Poncin, G. Wild, N. Midoux and **J. Bouillard**	2957	Study of hydrodynamic behaviour in bubble columns and external loop airlift reactors through analysis of pressure fluctuations
L. Chunxi and **W. Fürst**	2975	Representation of CO_2 and H_2S solubility in aqueous MDEA solutions using an electrolyte equation of state
C. D. Tacă and **M. Păunescu**	2989	Suspension of solid particles in spherical stirred vessels
A. Bombač and **I. Žun**	2995	Gas-filled cavity structures and local void fraction distribution in vessel with dual-impellers
A. J. D. Bates and **J. Bridgwater**	3003	The radial flow of pastes and gels
R. K. Niven, N. Khalili and **D. B. Hibbert**	3013	Mixed solid/dispersed phase particles in multiphase fluidised beds, Part I: Free energy of stability due to interfacial tension
R. K. Niven, N. Khalili and **D. B. Hibbert**	3033	Mixed solid/dispersed phase particles in multiphase fluidised beds. II: Stability at laminar to turbulent flow scales

Shorter Communications

L. Meng, M. Zhang and **L. Shen**	3053	Study on the resistance properties of pumping coal-water paste in pipes

J. Comiti, N. E. Sabiri and **A. Montillet** 3057 Experimental characterization of flow regimes in various porous media — III: limit of Darcy's or creeping flow regime for Newtonian and purely viscous non-Newtonian fluids

J. Krishnan, M. Bär, R. Imbihl and **I. G. Kevrekidis** 3063 Erratum to "Pulse dynamics and interaction on anisotropic surfaces: a computer assisted study" [Chemical Engineering Science 55 (2000) 257–266]

Number 16

D. J. Quiram, I.-M. Hsing, A. J. Franz, K. F. Jensen and **M. A. Schmidt** 3065 Design issues for membrane-based, gas phase microchemical systems

M. Sahibzada, B. C. H. Steele, K. Hellgardt, D. Barth, A. Effendi, D. Mantzavinos and **I. S. Metcalfe** 3077 Intermediate temperature solid oxide fuel cells operated with methanol fuels

L. H. Thompson and **L. K. Doraiswamy** 3085 The rate enhancing effect of ultrasound by inducing supersaturation in a solid–liquid system

K. Qiu and **O. Lindqvist** 3091 Direct sulfation of limestone at elevated pressures

S. Melis, M. Kemmere, J. Meuldijk, G. Storti and **M. Morbidelli** 3101 A model for the coagulation of polyvinyl acetate particles in emulsion

V. Costanza and **C. E. Neuman** 3113 Flexible operation through optimal tracking in nonlinear processes

H. Tewkesbury, A. G. F. Stapley and **P. J. Fryer** 3123 Modelling temperature distributions in cooling chocolate moulds

P. Angeli and **G. F. Hewitt** 3133 Drop size distributions in horizontal oil-water dispersed flows

S. Hauan, A. R. Ciric, A. W. Westerberg and **K. M. Lien** 3145 Difference points in extractive and reactive cascades. I – Basic properties and analysis

J. W. Lee, S. Hauan, K. M. Lien and **A. W. Westerberg** 3161 Difference points in extractive and reactive cascades. II — Generating design alternatives by the lever rule for reactive systems

C.-C. Huang and **Y.-P. Chen** 3175 Measurements and model prediction of the solid–liquid equilibria of organic binary mixtures

B. H. L. Betlem 3187 Batch distillation column low-order models for quality program control

X. Ni, J. A. Cosgrove, A. D. Arnott, C. A. Greated and **R. H. Cumming** 3195 On the measurement of strain rate in an oscillatory baffled column using particle image velocimetry

J. Alvarez-Ramírez, R. Suarez and **A. Morales**	3209	Cascade control for a class of uncertain nonlinear systems: a backstepping approach
A. G. Gayubo, J. M. Ortega, A. T. Aguayo, J. M. Arandes and **J. Bilbao**	3223	MTG fluidized bed reactor–regenerator unit with catalyst circulation: process simulation and operation of an experimental setup
H. Hatzantonis, H. Yiannoulakis, A. Yiagopoulos and **C. Kiparissides**	3237	Recent developments in modeling gas-phase catalyzed olefin polymerization fluidized-bed reactors: The effect of bubble size variation on the reactor's performance
N. T. Padial, W. B. VanderHeyden, R. M. Rauenzahn and **S. L. Yarbro**	3261	Three-dimensional simulation of a three-phase draft-tube bubble column
R. Krishna, J. M. van Baten and **M. I. Urseanu**	3275	Three-phase Eulerian simulations of bubble column reactors operating in the churn-turbulent regime: a scale up strategy
F. T. Pinho, F. M. Piqueiro, M. F. Proença and **A.M. Santos**	3287	Turbulent flow in stirred vessels agitated by a single, low-clearance hyperboloid impeller
A. R. Uribe-Ramírez and **W. J. Korchinsky**	3305	Fundamental theory for prediction of single-component mass transfer in liquid drops at intermediate Reynolds numbers ($10 \leqslant Re \leqslant 250$)
A. R. Uribe-Ramirez and **W. J. Korchinsky**	3319	Fundamental theory for prediction of multicomponent mass transfer in single-liquid drops at intermediate Reynolds numbers ($10 \leqslant Re \leqslant 250$)
Y. T. Puyate and **C. J. Lawrence**	3329	Steady state solutions for chloride distribution due to wick action in concrete

Number 17

E. C. Achilleos, R. K. Prud'homme, K. N. Christodoulou, K. R. Gee and **I. G. Kevrekidis**	3335	Dynamic deformation visualization in swelling of polymer gels
C. Castel, M. Schweizer, M. O. Simonnot and **M. Sardin**	3341	Selective removal of fluoride ions by a two-way ion-exchange cyclic process
M. Kamrunnahar, B. Huang and **D. G. Fisher**	3353	Estimation of Markov parameters and time-delay/interactor matrix
H.-T. Chiu, B. Yu, S. C. Chen and **L. J. Lee**	3365	Heat transfer during flow and resin reaction through fiber reinforcement
S. Mohanty, H. T. Davis and **A. V. McCormick**	3377	Shape selective adsorption in cylindrical pores
E. Delnoij, J. A. M. Kuipers, W. P. M. van Swaaij and **J. Westerweel**	3385	Measurement of gas–liquid two-phase flow in bubble columns using ensemble correlation PIV

B. D. Wood and **S. Whitaker**	3397	Multi-species diffusion and reaction in biofilms and cellular media
L. Vera, S. Delgado and **S. Elmaleh**	3419	Dimensionless numbers for the steady-state flux of cross-flow microfiltration and ultrafiltration with gas sparging
T. Kai, Y.-i. Suenaga, A. Migita and **T. Takahashi**	3429	Kinetic model for simultaneous leaching of zinc sulfide and manganese dioxide in the presence of iron-oxidizing bacteria
N. Kazantzis and **C. Kravaris**	3437	Synthesis of state feedback regulators for nonlinear processes
Y. Zhu, H. Wen and **Z. Xu**	3451	Global stability analysis and phase equilibrium calculations at high pressures using the enhanced simulated annealing algorithm
Y. Ding and **E. Alpay**	3461	Equilibria and kinetics of CO_2 adsorption on hydrotalcite adsorbent
H.-K. Hsuen	3475	An improved linear driving force approximation for intraparticle adsorption
Y. Lee, J. Lee and **S. Park**	3481	PID controller tuning for integrating and unstable processes with time delay
R. O. Espósito, M. Castier and **F. W. Tavares**	3495	Calculations of thermodynamic equilibrium in systems subject to gravitational fields
V. Balakotaiah and **N. Gupta**	3505	Controlling regimes for surface reactions in catalyst pores
W. R. Paterson, E. L. Berresford, D. L. Moppett, D. M. Scott, V. K. Simmons and **R. B. Thorpe**	3515	Gas flow maldistribution in moving beds of monosized particles
I. A. Karimi and **S. Farooq**	3529	Effect of sorbate–sorbate interaction on micropore diffusion in steady-state adsorption processes
S. W. Rutherford and **D. D. Do**	3543	Permeation time lag and heterogeneity in adsorbed phase transport
M. Feinberg	3553	Optimal reactor design from a geometric viewpoint — III. Critical CFSTRs
Shorter Communications		
W. R. Paterson	3567	Mass transfer to, and reaction on, a sphere immersed in a stationary or flowing gas
C. Tsouris and **J. Dong**	3571	Effects of electric fields on phase inversion of liquid–liquid dispersions

Number 18

P. J. Diepen, O. S. L. Bruinsma and **G. M. Van Rosmalen**	3575	Melt crystallization by controlled evaporative cooling. The caprolactam–water system in batch operation
J. J. Nijdam, T. A. G. Langrish and **R. B. Keey**	3585	A high-temperature drying model for softwood timber
I. S. K. Purnomo and **E. Alpay**	3599	Membrane column optimisation for the bulk separation of air
R. L. C. Giordano, R. C. Giordano, D. M. F. Prazeres and **C. L. Cooney**	3611	Analysis of a Taylor–Poiseuille vortex flow reactor — II: reactor modeling and performance assessment using glucose-fructose isomerization as test reaction
S. C. Yang and **S. S. Hsiau**	3627	Simulation study of the convection cells in a vibrated granular bed
J. W. Krozel, A. N. Palazoglu and **R. L. Powell**	3639	Experimental observation of dip-coating phenomena and the prospect of using motion control to minimize fluid retention
A. Aroonwilas and **P. Tontiwachwuthikul**	3651	Mechanistic model for prediction of structured packing mass transfer performance in CO_2 absorption with chemical reactions
J. Adánez, F. García-Labiano and **V. Fierro**	3665	Modelling for the high-temperature sulphation of calcium-based sorbents with cylindrical and plate-like pore geometries
F.-S. Wang and **J.-W. Sheu**	3685	Multiobjective parameter estimation problems of fermentation processes using a high ethanol tolerance yeast
M. García-Calzada, G. Marbán and **A. B. Fuertes**	3697	Stability and oxidative stabilisation of sulphided calcareous sorbents from entrained flow gasifiers
M. A. Koenders, S. Reymann and **R. J. Wakeman**	3715	The intermediate stage of the dead-end filtration process
N. C. P. Fernandes and **J. A. A. M. Castro**	3729	Steady-state simulation of a continuous moving bed reactor in the pulp and paper industry
M. J. W. Frank, J. A. M. Kuipers and **W. P. M. Van Swaaij**	3739	How to use mass transfer correlations for concentrated binary solutions
P. L. Lee, H. Li and **I. T. Cameron**	3743	Decentralized control design for nonlinear multi-unit plants: a gap metric approach

M. Moscosa-Santillán, O. Bals, H. Fauduet, C. Porte and **A. Delacroix**	3759	Study of batch crystallization and determination of an alternative temperature-time profile by on-line turbidity analysis — application to glycine crystallization
B. Srinivas and **S. Pushpavanam**	3771	Determining parameters where pressure drop oscillations occur in a boiling channel using singularity theory and the D-partition method
J. R. F. Guedes de Carvalho, M. A. R. Talaia and **M. J. F. Ferreira**	3785	Flooding instability of high-density gas slugs rising in vertical tubes filled with water
V. G. Krishnapura and **A. Jutan**	3803	A neural adaptive controller
A. Guzun-Stoica, M. Kurzeluk and **O. Floarea**	3813	Experimental study of Marangoni effect in a liquid–liquid system
J. E. Tolsma and **P. I. Barton**	3817	Computation of heteroazeotropes. Part I: Theory
J. E. Tolsma and **P. I. Barton**	3835	Computation of heteroazeotropes. Part II: efficient calculation of changes in phase equilibrium structure
A. Chi-Ying Wong	3855	Characterisation of the flowability of glass beads by bulk densities ratio
C. Chen, M. Horio and **T. Kojima**	3861	Numerical simulation of entrained flow coal gasifiers. Part I: modeling of coal gasification in an entrained flow gasifier
C. Chen, M. Horio and **T. Kojima**	3875	Numerical simulation of entrained flow coal gasifiers. Part II: effects of operating conditions on gasifier performance
M. M. J. Quina and **R. M. Q. Ferreira**	3885	Start-up and wrong-way behavior in a tubular reactor: dilution effect of the catalytic bed
R. Di Felice	3899	The pseudo-fluid model applied to three-phase fluidisation
F. Takemura and **Y. Matsumoto**	3907	Dissolution rate of spherical carbon dioxide bubbles in strong alkaline solutions
K. I. Alhumaizi and **A. E. Abasaeed**	3919	On mutating autocatalytic reactions in a CSTR. I: multiplicity of steady states
Y. Ding and **E. Alpay**	3929	Adsorption-enhanced steam–methane reforming
B. M. Jaćimović	3941	Entrainment effect on tray efficiency
M. Punčochář and **J. Drahoš**	3951	Limits of applicability of capillary model for pressure drop correlation

T. Wurzel, S. Malcus and **L. Mleczko** 3955 Reaction engineering investigations of CO_2 reforming in a fluidized-bed reactor

A. Belghit, M. Daguenet and **A. Reddy** 3967 Heat and mass transfer in a high temperature packed moving bed subject to an external radiative source

G. Saracco and **V. Specchia** 3979 Catalytic combustion of propane in a membrane reactor with separate feed of reactants. IV. Transition from the kinetics- to the transport-controlled regime

Number 19

Y.-C. Hu and **W. E. Bentley** 3991 A kinetic and statistical-thermodynamic model for baculovirus infection and virus-like particle assembly in suspended insect cells

H. Monnier, A. M. Wilhelm and **H. Delmas** 4009 Effects of ultrasound on micromixing in flow cell

S. J. Neethling, J. J. Cilliers and **E. T. Woodburn** 4021 Prediction of the water distribution in a flowing foam

I. Fishtik and **R. Datta** 4029 A thermodynamic approach to the systematic elucidation of unique reaction routes in catalytic reactions

F. Gao, F. Wang and **M. Li** 4045 Predictive control for processes with input dynamic nonlinearity

J. M. Frey and **P. Schmitz** 4053 Particle transport and capture at the membrane surface in cross-flow microfiltration

K. Li, E. M. Kennedy and **B. Z. Dlugogorski** 4067 Experimental and computational studies of the pyrolysis of $CBrF_3$, and the reaction of $CBrF_3$ with CH_4

E. H. van der Meer, R. B. Thorpe and **J. F. Davidson** 4079 Flow patterns in the square cross-section riser of a circulating fluidised bed and the effect of riser exit design

K. Smolders and **J. Baeyens** 4101 Overall solids movement and solids residence time distribution in a CFB-riser

H. Berthiaux 4117 Analysis of grinding processes by Markov chains

S. Malcus, G. Chaplin and **T. Pugsley** 4129 The hydrodynamics of the high-density bottom zone in a CFB riser analyzed by means of electrical capacitance tomography (ECT)

J.-J. Ko and **M.-H. Li** 4139 Kinetics of absorption of carbon dioxide into solutions of *N*-methyldiethanolamine + water

M. T. Colli-Serrano and **N. Midoux**	4149	Hydrodynamics and heat transfer in packed bed with co current up flow for coalescing and non-coalescing liquids. A simple model
J. Hua and **C.-H. Wang**	4159	Numerical simulation of bubble-driven liquid flows
Y. Zhong and **R. E. Rogers**	4175	Surfactant effects on gas hydrate formation
A. W. Kerst, B. Judat and **E.-U. Schlünder**	4189	Flow regimes of free jets and falling films at high ambient pressure
I-M. Hsing and **P. Futerko**	4209	Two-dimensional simulation of water transport in polymer electrolyte fuel cells
R. Zauner and **A. G. Jones**	4219	Determination of nucleation, growth, agglomeration and disruption kinetics from experimental precipitation data: the calcium oxalate system
P. Guichardon and **L. Falk**	4233	Characterisation of micromixing efficiency by the iodide–iodate reaction system. Part I: experimental procedure
P. Guichardon, L. Falk and **J. Villermaux**	4245	Characterisation of micromixing efficiency by the iodide–iodate reaction system. Part II: kinetic study
W. Gerlinger, K. Schneider, L. Falk and **H. Bockhorn**	4255	Numerical simulation of the mixing of passive and reactive scalars in two-dimensional flows dominated by coherent vortices
N. Mahadevan and **K. A. Hoo**	4271	Wavelet-based model reduction of distributed parameter systems
M. Berezowski	4291	Method of determination of steady-state diagrams of chemical reactors
N. S. Deshpande and **M. Barigou**	4297	The flow of gas–liquid foams in vertical pipes
C.-H. Wang and **B. J. Hwang**	4311	A general adsorption isotherm considering multi-layer adsorption and heterogeneity of adsorbent
P. Magnico	4323	Impact of dynamic processes on the coupling between fluid transport and precipitate deposition
S. Nonnenmacher and **M. Piesche**	4339	Design of hollow cone pressure swirl nozzles to atomize Newtonian fluids
E. Bendersky and **P. D. Christofides**	4349	Optimization of transport-reaction processes using nonlinear model reduction

H. Zhang and **J.-X. Zhu** 4367 Hydrodynamics in downflow fluidized beds (2): Particle velocity and solids flux profiles

Shorter Communication

M. Yokota, E. Oikawa, J. Yamanaka, A. Sato and **N. Kubota** 4379 Formation and structure of round-shaped crystals of barium sulfate

Letter to the Executive Editors

K. G. Neoh and C. Tien 4383 State of the chemical industry in East and Southeast Asia

Number 20

A. Hinz, B. Nilsson and **A. Andersson** 4385 Simulation of transients in heterogeneous catalysis: a comparison of the step- and pulse-transient techniques for the study of hydrocarbon oxidation on metal oxide catalysts

C. J. Brown, E. H. Lahlouh and **J. M. Rotter** 4399 Experiments on a square planform steel silo

H. J. Keh and **S. C. Shiau** 4415 Effects of inertia on the slow motion of aerosol particles

J. Sheng, H. Meng and **R. O. Fox** 4423 A large eddy PIV method for turbulence dissipation rate estimation

O. Galán, J. A. Romagnoli and **A. Palazoglu** 4435 Robust H_∞ control of nonlinear plants based on multilinear models: an application to a bench-scale pH neutralization reactor

J. Cooper and **W. L. H. Hallett** 4451 A numerical model for packed-bed combustion of char particles

A. B. Gorbach, S. D. Naik and **W. H. Ray** 4461 Dynamics and stability analysis of solid catalyzed gas-phase polymerization of olefins in continuous stirred bed reactors

S. S. Hsiau, J. Smid, H. H. Tsai, J. T. Kuo and **C. S. Chou** 4481 Flow patterns and velocity fields of granules in Dorfan Impingo filters for gas cleanup

S. Mukhopadhyay and **M. Sahimi** 4495 Calculation of the effective permeabilities of field-scale porous media

J.-L. Liow 4515 Quasi-equilibrium bubble formation during top-submerged gas injection

J. Padin, S. U. Rege, R. T. Yang and **L. S. Cheng** 4525 Molecular sieve sorbents for kinetic separation of propane/propylene

G. Biressi, F. Quattrini, M. Juza, M. Mazzotti, V. Schurig and **M. Morbidelli**	4537	Gas chromatographic simulated moving bed separation of the enantiomers of the inhalation anesthetic enflurane
C. Conrado and **V. Vesovic**	4549	The influence of chemical composition on vaporisation of LNG and LPG on unconfined water surfaces
D. Kunii and **O. Levenspiel**	4563	The K-L reactor model for circulating fluidized beds
S. W. Tsai, I. C. Cheng and **C. M. Huang**	4571	Effects of hydrolysis and esterification side-reactions on the kinetic resolution of enzyme-catalyzed irreversible transesterification in organic solvents
B. Huang	4583	Multivariable model validation in the presence of time-variant disturbance dynamics
Y. Li, J. Zhang and **L.-S. Fan**	4597	Discrete-phase simulation of single bubble rise behavior at elevated pressures in a bubble column
D. Maggioris, A. Goulas, A. H. Alexopoulos, E. G. Chatzi and **C. Kiparissides**	4611	Prediction of particle size distribution in suspension polymerization reactors: effect of turbulence nonhomogeneity
Z. Yu and **W. Admassu**	4629	Modeling of electrodialysis of metal ion removal from pulp and paper mill process stream
X. Ma, T. Kaneko, T. Tashimo, T. Yoshida and **K. Kato**	4643	Use of limestone for SO_2 removal from flue gas in the semidry FGD process with a powder-particle spouted bed
H. K. Nahra and **Y. Kamotani**	4653	Bubble formation from wall orifice in liquid cross-flow under low gravity
R. M. Oisiovici and **S. L. Cruz**	4667	State estimation of batch distillation columns using an extended Kalman filter
F. Meknassi, R. Benkirane, A. Liné and **L. Masbernat**	4681	Numerical modeling of wavy stratified two-phase flow in pipes
M. Cook and **M. Behnia**	4699	Pressure drop calculation and modelling of inclined intermittent gas–liquid flow
R. Wanker, H. Raupenstrauch and **G. Staudinger**	4709	A fully distributed model for the simulation of a catalytic combustor
H. Shahrokhi and **J. M. Shaw**	4719	Fine drop recovery in batch gas-agitated liquid–liquid systems
A. Neville and **A. P. Morizot**	4737	A combined bulk chemistry/electrochemical approach to study the precipitation, deposition and inhibition of $CaCO_3$
S. E. Iyuke, W. R. W. Daud, A. B. Mohamad, A. A. H. Kadhum, Z. Fisal and **A. M. Shariff**	4745	Application of Sn-activated carbon in pressure swing adsorption for purification of H_2

S. Sajjadi and **B. W. Brooks** 4757 Semibatch emulsion polymerisation reactors: polybutyl acrylate case study

Shorter Communication

P. C. Knight, J. P. K. Seville, H. Kamiya and **M. Horio** 4783 Modelling of sintering of iron particles in high-temperature gas fluidisation

Number 21

Review

H. T. Bi, N. Ellis, I. A. Abba and **J. R. Grace** 4789 A state-of-the-art review of gas–solid turbulent fluidization

S. U. Rege, R. T. Yang and **M. A. Buzanowski** 4827 Sorbents for air prepurification in air separation

S. Kojevnikova and **Y. Zimmels** 4839 Mechanism of aerosol collection by two- and three-dimensional inhomogeneous arrays of charged drops

J.-B. Ritz, F. Bertrand, F. Thibault and **P. A. Tanguy** 4857 Shear-induced particle migration in a short-dwell coater

M. Clarke and **P. R. Bishnoi** 4869 Determination of the intrinsic rate of ethane gas hydrate decomposition

M. Mehrvar, W. A. Anderson, M. Moo-Young and **P. M. Reilly** 4885 Non-linear parameter estimation for a dynamic model in photocatalytic reaction engineering

Y. Zeng, S. Kaytakoglu and **D. P. Harrison** 4893 Reduced cerium oxide as an efficient and durable high temperature desulfurization sorbent

Y. Lu, A. G. Dixon, W. R. Moser and **Y. H. Ma** 4901 Oxidative coupling of methane in a modified γ-alumina membrane reactor

G.-J. Chen, C.-Y. Sun and **T.-M. Guo** 4913 A theoretical revision of the derivation of liquid property expressions from an equation of state and its application

R. Monroy-Loperena, E. Perez-Cisneros and **J. Alvarez-Ramirez** 4925 A robust PI control configuration for a high-purity ethylene glycol reactive distillation column

A. Drewsen, A. Ljungqvist, M. Skoglundh and **B. Andersson** 4939 Effects of the radial distribution of platinum in spherical alumina catalysts on the oxidation of CO in air

R. Chebbi 4953 Inertia–gravity spreading of oil on water

C. Freitas, M. Fialová, J. Zahradnik and **J. A. Teixeira** 4961 Hydrodynamics of a three-phase external-loop airlift bioreactor

N. Kumar, T. S. King and **R. D. Vigil**	4973	A portal model for structure sensitive hydrogen adsorption on $Ru–Ag/SiO_2$ catalysts
M. F. Mathias and **G. P. Muldowney**	4981	Effect of solids loading method on bed porosity and gas flux distribution in a fixed-bed reactor
X. Ji, X. Lu, L. Zhang, N. Bao, Y. Wang, J. Shi and **B. C.-Y. Lu**	4993	A further study of solid–liquid equilibrium for the $NaCl–NH_4Cl–H_2O$ system
M. V. Ferer and **D. H. Smith**	5003	Filter cake removal efficiency: comparison of modeling results with experiment
J. A. B. Satrio, H. J. Glatzer and **L. K. Doraiswamy**	5013	Triphase catalysis: a rigorous mechanistic model for nucleophilic substitution reactions based on a modified Langmuir–Hinshelwood/Eley–Rideal approach
M. J. Savelski and **M. J. Bagajewicz**	5035	On the optimality conditions of water utilization systems in process plants with single contaminants
L. Broussous, P. Schmitz, H. Boisson, E. Prouzet and **A. Larbot**	5049	Hydrodynamic aspects of filtration antifouling by helically corrugated membranes
M. F. Cardoso, R. L. Salcedo, S. F. de Azevedo and **D. Barbosa**	5059	Optimization of reactive distillation processes with simulated annealing
X. Zhu, R. J. Campero and **R. D. Vigil**	5079	Axial mass transport in liquid–liquid Taylor–Couette–Poiseuille flow
A. V. Vorontsov, E. N. Savinov and **P. G. Smirniotis**	5089	Vibrofluidized- and fixed-bed photocatalytic reactors: case of gaseous acetone photooxidation
M. Onozaki, Y. Namiki, N. Sakai, M. Kobayashi, Y. Nakayama, T. Yamada and **S. Morooka**	5099	Dynamic simulation of gas–liquid dispersion behavior in coal liquefaction reactors
H. M. Park and **W. S. Jung**	5115	A recursive algorithm for multidimensional inverse heat conduction problems by means of mode reduction
M. A. Pacheco, S. Kaganoi and **G. T. Rochelle**	5125	CO_2 absorption into aqueous mixtures of diglycolamine® and methyldiethanolamine
W. D. Monnery, K. A. Hawboldt, A. Pollock and **W. Y. Svrcek**	5141	New experimental data and kinetic rate expression for the Claus reaction
H. J. Glatzer and **L. K. Doraiswamy**	5149	Rate enhancements due to autocatalysis and heterogenization in phase transfer catalysis: a comparative study

Shorter Communications

I. Grubecki and **M. Wojcik**	5161	Comparison between isothermal and optimal temperature policy for batch reactor
R. Bai	5165	Effect of energy correlation on multicomponent adsorption equilibria prediction using heterogeneous extended Langmuir model
S.-H. Yoon and **J.-S. Kim**	5171	Effect of the origin of humic acids on nanofilter fouling in drinking water production
S. K. Wasylkiewicz	5177	Transformed molar Gibbs free energy of mixing in multireaction systems

Number 22

Review

R. Taylor and **R. Krishna**	5183	Modelling reactive distillation
B. D. Wood, M. Quintard and **S. Whitaker**	5231	Jump conditions at non-uniform boundaries: the catalytic surface
Z. Liang, M. A. Ioannidis and **I. Chatzis**	5247	Permeability and electrical conductivity of porous media from 3D stochastic replicas of the microstructure
M. J. Okasinski and **M. F. Doherty**	5263	Prediction of heterogeneous reactive azeotropes in esterification systems
A. Braun, M. Bärtsch, B. Schnyder and **R. Kötz**	5273	A model for the film growth in samples with two moving reaction frontiers — an application and extension of the unreacted-core model
P. D. Noymer and **L. R. Glicksman**	5283	Descent velocities of particle clusters at the wall of a circulating fluidized bed
M. Stein, Y. L. Ding, J. P. K. Seville and **D. J. Parker**	5291	Solids motion in bubbling gas fluidised beds
T. Nishimura, S. Sakura and **Y. Ogata**	5301	Mass transfer through the diffusive interface in a two-layer, salt-stratified system under a horizontal temperature gradient
J. F. Widmann, S. R. Charagundla and **C. Presser**	5311	Aerodynamic study of a vane-cascade swirl generator
M. Oliva, M. U. Alzueta, A. Millera and **R. Bilbao**	5321	Theoretical study of the influence of mixing in the SNCR process. Comparison with pilot scale data

A. Pfennig	5333	Mass transfer across an interface induces formation of micro droplets in lattice systems
P. A. Charpentier, J. M. DeSimone and **G. W. Roberts**	5341	Decomposition of polymerisation initiators in supercritical CO_2: a novel approach to reaction kinetics using a CSTR
C. Charcosset, A. Cherfi and **J.-C. Bernengo**	5351	Characterization of microporous membrane morphology using confocal scanning laser microscopy
J. Tobiś	5359	Influence of bed geometry on its frictional resistance under turbulent flow conditions
V. Balakotaiah, N. Gupta and **D. H. West**	5367	A simplified model for analyzing catalytic reactions in short monoliths
T. Ban, F. Kawaizumi, S. Nii and **K. Takahashi**	5385	Study of drop coalescence behavior for liquid–liquid extraction operation
M. Singh and **K. K. Mohanty**	5393	Permeability of spatially correlated porous media
J. Bao, K. Furumoto, K. Fukunaga and **K. Nakao**	5405	Average and local oxygen transfer properties in bubble column with axial distribution of immobilized glucose oxidase gel beads
W. L. Duncan and **K. P. Möller**	5415	A 'zero length' criterion for ZLC chromatography
S. Blagov, B. Bessling, H. Schoenmakers and **H. Hasse**	5421	Feasibility and multiplicity in reaction–distillation processes for systems with competing irreversible reactions
G. Brenn	5437	On the controlled production of sprays with discrete polydisperse drop size spectra
M. Ghadiri, Z. Ning, S. J. Kenter and **E. Puik**	5445	Attrition of granular solids in a shear cell
H. M. Henrique, E. L. Lima and **D. E. Seborg**	5457	Model structure determination in neural network models
P. Kesavan and **J. H. Lee**	5471	Selective intermittent adaptive control of processes subject to large infrequent changes
B. J. Yoon	5485	Continuum theory for ionic field charging of spheroidal aerosols in nonuniform electric field
J. Alvarez-Ramirez and **A. Morales**	5497	PI control of continuously stirred tank reactors: stability and performance
C. Kouris and **J. Tsamopoulos**	5509	Concentric core-annular flow in a circular tube of slowly varying cross-section

S. Bishnoi and **G. T. Rochelle** 5531 Absorption of carbon dioxide into aqueous piperazine: reaction kinetics, mass transfer and solubility

J. Comiti, E. Mauret and **M. Renaud** 5545 Mass transfer in fixed beds: proposition of a generalized correlation based on an energetic criterion

P. Buffière and **R. Moletta** 5555 Collision frequency and collisional particle pressure in three-phase fluidized beds

Number 23

I. Seyssiecq, S. Veesler, D. Mangin, J. P. Klein and **R. Boistelle** 5565 Modelling gibbsite agglomeration in a constant supersaturation crystallizer

K. Li, J. Kong and **X. Tan** 5579 Design of hollow fibre membrane modules for soluble gas removal

B. J. Lommerts, G. H. Graaf and **A. A. C. M. Beenackers** 5589 Mathematical modeling of internal mass transport limitations in methanol synthesis

S. P. Rigby and **L. F. Gladden** 5599 Deconvolving pore shielding effects in mercury porosimetry data using NMR techniques

L. A. Luo, H. Kabir, S. Chanel and **D. Tondeur** 5613 Vanishing peaks in inverse perturbation chromatography

C.-H. Wang and **B.-J. Hwang** 5627 Competitive adsorption mechanisms for alkanes adsorbed on adsorbents via multi-layer theory

J. Zhou, W. Li and **W. Xiao** 5637 Kinetics of heterogeneous oxidation of concentrated ammonium sulfite

I. Yongsunthon and **E. Alpay** 5643 Total connectivity models for adsorptive reactor design

F. Guillard, C. Trägårdh and **L. Fuchs** 5657 A study on the instability of coherent mixing structures in a continuously stirred tank

H. S. Mumtaz and **M. J. Hounslow** 5671 Aggregation during precipitation from solution: an experimental investigation using Poiseuille flow

L. Bernard, M. Freche, J. L. Lacout and **B. Biscans** 5683 Modeling of the dissolution of calcium hydroxide in the preparation of hydroxyapatite by neutralization

R. P. O'Connor and **L. D. Schmidt** 5693 C_6 oxygenates from *n*-hexane in a single-gauze reactor

I. Polishuk, J. Wisniak and **H. Segura** 5705 A novel approach for defining parameters in a four-parameter EOS

N.-S. Chang, S. Aldrett, M. T. Holtzapple and **R. R. Davison** 5721 Kinetic studies of ketone hydrogenation over Raney nickel catalyst

R. Hooper, C. W. Macosko and **J. J. Derby**	5733	Assessing a flow-based finite element model for the sintering of viscoelastic particles
G. Mason, B. A. Buffham, M. J. Heslop, P. A. Russell and **B. Zhang**	5747	Perturbation viscometry of gas mixtures. Addition and removal of finite perturbations
S. J. Kowalski, K. Rajewska and **A. Rybicki**	5755	Destruction of wet materials by drying
S. Subramanian, A. L. Ballard, R. A. Kini, S. F. Dec and **E. D. Sloan Jr.**	5763	Structural transitions in methane + ethane gas hydrates — Part I: upper transition point and applications
A. L. Ballard and **E. D. Sloan Jr.**	5773	Structural transitions in methane + ethane gas hydrates — Part II: modeling beyond incipient conditions
J. J. Kasab, S. Mehta and **W. E. Stewart**	5783	Transport modelling of packed-tube reactors — IV: Steady-state modelling with intraparticle gradients
A. Paglianti, S. Pintus and **M. Giona**	5793	Time-series analysis approach for the identification of flooding/loading transition in gas–liquid stirred tank reactors
B. A. Buffham	5803	The size and compactness of particles of arbitrary shape: application to catalyst effectiveness factors
G. Hinderaker and **O. C. Sandall**	5813	Absorption of carbonyl sulfide in aqueous diethanolamine
D. C. K. Ko, J. F. Porter and **G. McKay**	5819	Optimised correlations for the fixed-bed adsorption of metal ions on bone char
Y. Liao and **J. B. McLaughlin**	5831	Dissolution of a freely rising bubble in aqueous surfactant solutions
G. Vázquez-Uña, F. Chenlo-Romero, M. Sánchez-Barral and **V. Pérez-Muñuzuri**	5851	Mass transfer enhancement due to surface wave formation at a horizontal gas–liquid interface
J.-H. Yun, D.-K. Choi and **H. Moon**	5857	Benzene adsorption and hot purge regeneration in activated carbon beds
H.-M. Yeh and **Y.-K. Chen**	5873	The effect of multipass arrangement on the performance in a membrane extractor of fixed configuration
P. Vrábel, R. G. J. M. van der Lans, K. Ch. A. M. Luyben, L. Boon and **A. W. Nienow**	5881	Mixing in large-scale vessels stirred with multiple radial or radial and axial up-pumping impellers: modelling and measurements
H. López-Arjona, R. Lobo and **T. Viveros-García**	5897	A film-penetration model for non-isothermal absorption with chemical reaction
A. D. Martin	5907	Interpretation of residence time distribution data

C. Huang, F. T. T. Ng and **G. L. Rempel** 5919 Application of catalytic distillation for the aldol condensation of acetone: the effect of the mass transfer and kinetic rates on the yield and selectivity

Shorter Communications

S. Sciffer 5933 A phenomenological model of dynamic contact angle

M. Winterberg and **E. Tsotsas** 5937 Correlations for effective heat transport coefficients in beds packed with cylindrical particles

Number 24

Review

G. Kolios, J. Frauhammer and **G. Eigenberger** 5945 Autothermal fixed-bed reactor concepts

Y. S. Fangary, M. Barigou, J. P. K. Seville and **D. J. Parker** 5969 Fluid trajectories in a stirred vessel of non-newtonian liquid using positron emission particle tracking

R. A. Damion, K. J. Packer, K. S. Sorbie and **S. R. McDougall** 5981 Pore-scale network modelling of flow propagators derived from pulsed magnetic field gradient spin echo NMR measurements in porous media

C. D. Blasi 5999 Modelling the fast pyrolysis of cellulosic particles in fluid-bed reactors

T. Sugahara, K. Morita and **K. Ohgaki** 6015 Stability boundaries and small hydrate-cage occupancy of ethylene hydrate system

E. Tronconi and **G. Groppi** 6021 A study on the thermal behavior of structured plate-type catalysts with metallic supports for gas/solid exothermic reactions

T. S. Li, A. L. Rohl and **D. Ilievski** 6037 Modelling non-stationary precipitation systems: sources of error and their propagation

L. J. Forney and **N. Nafia** 6049 Eddy contact model: CFD simulations of liquid reactions in nearly homogeneous turbulence

J. Choi and **V. Manousiouthakis** 6059 On a measure of bounded input/initial state bounded output stability over ball

Y. Liang, S.-S. Qu, C.-X. Wang, G.-L. Zou, Y.-X. Wu and **D.-H. Li** 6071 An on-line calorimetric study of the dismutation of superoxide anion catalyzed by SOD in batch reactors

C. Y. Wang 6079 On the diffusion past a staggered array of rectangular fibers

S. R. Bellara, C. M. McFarlane, C. R. Thomas and **P. J. Fryer**	6085	The growth of *Escherichia coli* in a food simulant during conduction cooling: combining engineering and microbiological modelling
M. Shams, G. Ahmadi and **H. Rahimzadeh**	6097	A sublayer model for deposition of nano- and micro-particles in turbulent flows
N. Vladimirova, A. Malagoli and **R. Mauri**	6109	Two-dimensional model of phase segregation in liquid binary mixtures with an initial concentration gradient
S. Desikan and **L. K. Doraiswamy**	6119	Enhanced activity of polymer-supported phase transfer catalysts
A. D. Lawrence and **J. Bu**	6129	The reactions between Ca-based solids and gases representative of those found in a fluidized-bed incinerator
R. Baur, R. Taylor and **R. Krishna**	6139	Development of a dynamic nonequilibrium cell model for reactive distillation tray columns
G.-Y. Zhu, A. Zamamiri, M. A. Henson and **M. A. Hjortsø**	6155	Model predictive control of continuous yeast bioreactors using cell population balance models
S. M. S. Dommeti and **V. Balakotaiah**	6169	On the limits of validity of effective dispersion models for bulk reactions
B. Feng and **S. K. Bhatia**	6187	Determination of activation energy distributions for chemisorption of oxygen on carbon: an improved approach
V. M. Bhandari, T. Yonemoto and **V. A. Juvekar**	6197	Investigating the differences in acid separation behaviour on weak base ion exchange resins
H. J. Eberl, C. Picioreanu, J. J. Heijnen and **M. C. M. van Loosdrecht**	6209	A three-dimensional numerical study on the correlation of spatial structure, hydrodynamic conditions, and mass transfer and conversion in biofilms
J. M. Casas, F. Alvarez and **L. Cifuentes**	6223	Aqueous speciation of sulfuric acid–cupric sulfate solutions
A. J. J. van der Zanden	6235	Heat and mass transfer in heterogeneous media where a phase transition takes place
W. Zhang and **R. B. H. Tan**	6243	A model for bubble formation and weeping at a submerged orifice
B. Benadda, K. Kafoufi, P. Monkam and **M. Otterbein**	6251	Hydrodynamics and mass transfer phenomena in countercurrent packed column at elevated pressures

R. B. H. Tan, W. B. Chen and **K. H. Tan** 6259 A non-spherical model for bubble formation with liquid cross-flow

M. Hartman, O. Trnka and **K. Svoboda** 6269 Fluidization characteristics of dolomite and calcined dolomite particles